PTS-S

POST TENSIONING &
STRUCTURAL SOLUTIONS

OVM

COMPANY PROFILE

INTRODUCTION

This company profile provides an overview of PTS Solutions, a leading provider of specialist construction and engineering solutions. It highlights our expertise in post tensioning and structural solutions, our commitment to client success, and our strategic partnerships that enable us to deliver exceptional results for complex infrastructure projects across Africa and beyond. This document also introduces our executive team, our core services, and our values, showcasing our dedication to quality, safety, and innovation.

ABOUT US

SPECIALIST POST-TENSIONING & STRUCTURAL SOLUTIONS

PTS Solutions specialises in post tensioning and structural solutions, delivering specialist construction and engineering services with a client-first approach. We add value to all stakeholders through collaboration with key supply chain partners and a commitment to delivering projects of an exceptional standard.

Drawing on over 80 years of collective construction experience, our team of engineers and contracting professionals provides innovative and cost-effective solutions to complex construction and engineering challenges across Africa and beyond.

KEY DIFFERENTIATORS:

- **Deep industry knowledge in post tensioning and structural solutions.**
- **A collaborative approach that ensures seamless project integration.**
- **A focus on delivering practical and economically advantageous solutions.**
- **Commitment to sustainable practices and adherence to the highest standards of Health, Safety, Quality, and Environmental Management.**




OUR COMMITMENT TO EXCELLENCE

CLIENT FOCUS	Building strong, collaborative relationships with our clients to understand their unique needs and deliver tailored solutions.
QUALITY AND SAFETY	Adhering to the highest standards of quality and safety in all our operations, ensuring the integrity and reliability of our projects.
INNOVATION AND SUSTAINABILITY	Embracing innovative technologies and sustainable practices to minimise environmental impact and contribute to a better future.
INTEGRITY AND PROFESSIONALISM	Conducting our business with the utmost integrity and professionalism, fostering trust and long-term partnerships.


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EXECUTIVE TEAM

PTS SOLUTIONS IS POWERED BY A TEAM OF HIGHLY SKILLED ENGINEERS AND CONTRACTING PROFESSIONALS WITH OVER 80 YEARS OF COLLECTIVE EXPERIENCE IN THE CONSTRUCTION INDUSTRY. OUR EXPERTISE AND DEDICATION ARE THE FOUNDATION OF OUR SUCCESS.

PTS Solutions is led by a team of highly experienced professionals whose expertise and vision drive the company's success in delivering complex and innovative construction solutions.

GARY WILLIAMS, DIRECTOR

Gary has over 30 years' experience in civil engineering construction, both locally and internationally, with a proven track record in delivering complex infrastructure projects. This includes the construction of six bridge incrementally launched bridges (ILM) as the main contractor. All bridges were constructed in South Africa and are summarised below:

Klip River Road Bridge: The ILM bridge over the Klip River in Ladysmith, constructed in 1997 by Stefanutti & Bressan.

Durban Southern Gateway: The ILM bridge following a global curve off the South bound N3 and over the M4 in Durban, constructed in 1999 by Stefanutti & Bressan.

Mgeni Viaduct: The construction of two ILM bridges over the Umgeni River between Kwamashu and New Germany in Durban, constructed in 2009 by Rumdel Cape.

Umgeni Interchange: The construction of two ILM bridges as part of the upgraded Umgeni Interchange in Durban, constructed in 2015 by Rumdel Cape.

PAUL HEYMANS, DIRECTOR

With over 30 years in civil engineering consulting, construction, and specialist subcontracting in post tensioning and bridge launching, Paul brings a wealth of expertise to complex projects.

His experience includes the provision of specialist post tensioning, temporary works design co-ordination, and on-site launching services for nine incrementally launched bridge structures across South Africa. Notable projects include the 410m curved Elands Interchange bridge as part of the Gauteng Freeways improvement project (Siya Vaya Joint Venture), and Bridges B0045 & B0046, both 150m ILM bridges constructed on a 3.4% downhill gradient (also Siya Vaya Joint Venture).

Further demonstrating his capabilities are the 150m curved Chota Motala interchange in Pietermaritzburg (Group Five Construction), the 310m long Majuba rail bridge in Mpumalanga for Transnet (Grinaker/LTA), the three incrementally launched bridges at the Mt Edgecombe interchange in Durban (CMC Di Ravenna), and the 210m ILM Northern Aquaduct pipe bridge over the Umgeni River in Durban (ICON Construction).

SERVICES & EXPERTISE

PTS SOLUTIONS OFFERS A COMPREHENSIVE SUITE OF SPECIALIST CONSTRUCTION AND ENGINEERING SERVICES, DELIVERED WITH EXPERTISE AND A COMMITMENT TO INNOVATION.

Our services are designed to meet the diverse and evolving needs of the construction industry, providing reliable, efficient, and cost-effective solutions.

POST TENSIONING

Post tensioning significantly enhances concrete strength and durability by applying pre-stressed steel, counteracting tensile forces. This increases load capacity, reduces cracking, and offers greater design flexibility, ideal for large projects needing longer spans and thinner slabs.

PTS Solutions offers extensive expertise in tailored post tensioning designs, using advanced equipment and partnering with OVM for cutting-edge technology. Our skilled team collaborates closely with engineers and architects for precise installation, adhering to high safety and quality standards. Post tensioning is widely used in bridges, buildings, and parking structures.

Benefit from enhanced structural performance, cost-effectiveness, design flexibility, and our reliable partnership.

STAY CABLE BRIDGES

Stay cable bridges are iconic structures utilising inclined cables to directly support the bridge deck, allowing for longer spans and aesthetically pleasing designs. These complex projects demand specialised engineering and construction techniques to ensure structural integrity and long-term performance.

PTS Solutions possesses the expertise and experience to manage all facets of stay cable bridge projects, from initial design and analysis through to final installation and ongoing maintenance. Our team employs advanced software for designing stay cable systems, ensuring optimal load distribution and stability. We utilise precision equipment for cable installation and tensioning. Our collaboration with global partners, including OVM, provides access to innovative technologies.

Stay cable bridges offer advantages like long spans and aesthetic appeal for major river crossings and highway interchanges. Choosing PTS Solutions ensures technical expertise, a proven track record, and a commitment to quality.

PERMANENT & TEMPORARY WORKS DESIGN

In construction, meticulous design is crucial for both permanent structures, focusing on long-term integrity, and temporary works, addressing essential construction support systems. PTS Solutions provides comprehensive design services ensuring safety, efficiency, and project success.

Our experienced structural engineers offer permanent works design, including analysis and detailed drawings for buildings and bridges. We also provide temporary works design for formwork, scaffolding, and shoring, alongside Finite Element Analysis (FEA) and Building Information Modelling (BIM). Ensuring compliance with regulations is paramount. Temporary works are vital for construction safety and stability. Our collaborative approach ensures tailored solutions.

Our design services apply to high-rise buildings, bridges, industrial facilities, and more. Benefit from our technical expertise and innovative solutions.

SERVICES & EXPERTISE

STRUCTURAL BAR

quality products, technical expertise, reliable supply, Structural bars, including high tensile and reinforcement bars, are essential for providing critical reinforcement and structural support in modern construction. Engineered to withstand significant tensile forces, they ensure the stability and longevity of concrete and steel structures.

PTS Solutions offers a range of high-quality structural bar solutions to meet demanding project requirements. This includes high tensile threaded bars for robust connections, reinforcement bars (rebar) to enhance concrete strength, specialised anchor bars, and custom fabrication. Our experts provide technical advice, and we partner with trusted suppliers like OVM for high-quality products.

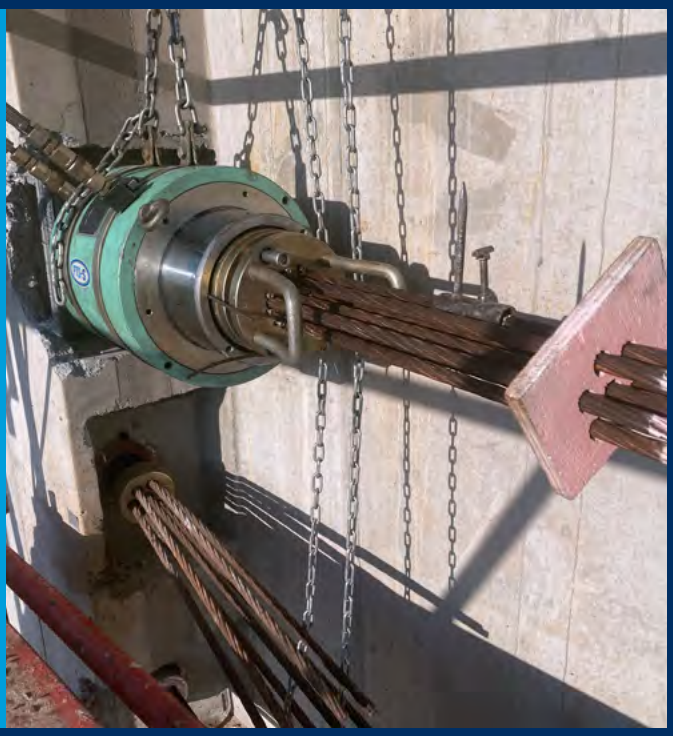
Structural bars are used in bridges, tunnels, high-rise buildings, and post-tensioning systems. Using quality bars provides increased strength, enhanced durability, and design flexibility. Choose PTS Solutions for high-quality products and technical expertise.

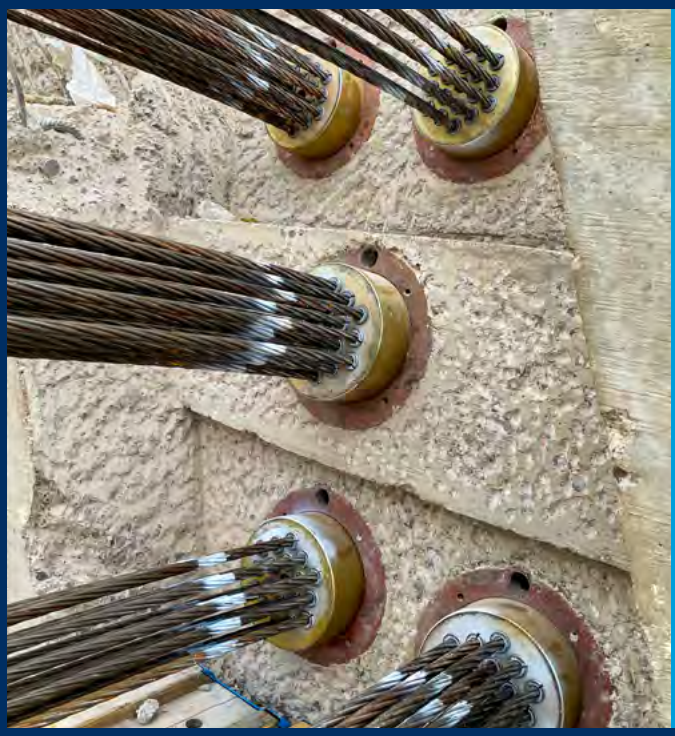
GROUND ANCHORS

Ground anchors, also known as soil or rock anchors, are vital geotechnical systems providing stability to structures and excavations by transferring tensile loads into stable ground. PTS Solutions offers comprehensive solutions tailored to specific geotechnical conditions.

Our experienced team handles design and analysis through site investigations, precise installation using advanced techniques, and thorough testing to verify performance. We also provide specialised applications like soil nailing and tieback systems. Our collaboration with leading suppliers, including OVM, ensures high-quality materials.

Ground anchors are used in slope stabilisation, retaining walls, and foundation support. Benefit from increased stability, cost-effectiveness, and our geotechnical expertise.





BRIDGE LAUNCHING AND JACKING

Bridge launching and jacking are specialised construction techniques used to move and position bridge structures with precision and safety. Launching involves incrementally sliding the deck, while jacking adjusts the height. These are crucial for challenging environments and for maintenance.

PTS Solutions offers expertise and equipment for these complex operations. Our team handles launch design and planning, jacking system design and installation, and precision movement control using advanced monitoring. We also provide heavy lifting services. Our partnership with OVM provides access to cutting-edge technology.

These techniques are used for construction over obstacles and bridge rehabilitation. Choose PTS Solutions for technical expertise and specialised equipment.

CONCRETE REPAIRS AND STRENGTHENING

Concrete structures degrade over time due to environmental factors and stress, leading to cracking and spalling. PTS Solutions offers expert repair and strengthening to restore and enhance structural performance.

Our repair services include crack injection to restore integrity, surface patching for damaged areas, and concrete replacement. We also offer electrochemical repair for corrosion and protective coatings.

For strengthening, we use Fibre Reinforced Polymer (FRP) to increase strength, steel plate bonding to enhance load capacity, Near Surface Mounted (NSM) reinforcement, and post-tensioning for improved durability.

These services apply to bridges, buildings, and marine structures. Choose PTS Solutions for extended lifespan, improved safety, and reliable, expert solutions.

INFRASTRUCTURE SOLUTIONS

ENGINEERING FOR A STRONGER FUTURE

PTS Solutions is a trusted partner for complex infrastructure projects, providing a full suite of services from initial design to final construction. We deliver efficient, sustainable, and reliable outcomes for large-scale projects, recognising the critical role infrastructure plays in economic development and societal well-being.

KEY CAPABILITIES

- **Best-Practice Systems:** We implement best-practice Health, Safety, Quality, and Environmental Management Systems to ensure projects are delivered safely, efficiently, and to the highest standard. Our commitment to these systems minimises risk, maximises productivity, and contributes to the long-term sustainability of infrastructure.
- **Diverse Project Capability:** PTS Solutions serves a diverse range of public and private sector clients, providing specialist construction and engineering services tailored to the unique demands of each project. Our experience spans various infrastructure sectors, including road, water, bridge, and energy infrastructure.
- **Specialist Technical Expertise:** Our team possesses extensive knowledge and experience in a wide range of specialised construction techniques, including post tensioning, stay cable construction, heavy lifting and bridge jacking, incremental launching, and ground anchoring.
- **Geo-technical Solutions:** PTS Solutions provides comprehensive geo-technical solutions, offering both design and construction expertise. Our range of high-quality construction products includes bridge bearings and joints, and high tensile stress bars.
- **Strategic Partnerships & Global Reach**

STRATEGIC PARTNERSHIPS

OVM PARTNERSHIP

Our strategic partnership with OVM is a cornerstone of our ability to deliver exceptional structural solutions. OVM, a global leader in post-tensioning systems and advanced construction technologies, provides us with access to state-of-the-art solutions, enhanced technical support, and a proven track record of excellence.

OTHER KEY PARTNERS

We also collaborate with specialist engineering firms such as Wiecon, providing multidisciplinary bridge engineering consultancy, and Struttura Consulting, experts in temporary works design and erection engineering.

GEOGRAPHICAL FOOTPRINT

PTS Solutions has a strong presence in Southern Africa, with offices in Durban, Cape Town, and Johannesburg. Our expertise extends across the region, delivering innovative solutions for projects of all sizes and complexities.

PROJECTS

PTS Solutions has a proven track record of delivering successful and innovative solutions for a diverse range of construction projects. Our portfolio demonstrates our expertise, commitment to quality, and ability to overcome complex engineering challenges.

PROJECT

SENQU RIVER BRIDGE

INCREMENTALLY LAUNCH BRIDGE WITH EXTRADOSED STAY CABLE SECTION

PROJECT OVERVIEW

Location: On the A1 road between Thlokoeng and Mokhotlong in Lesotho, Southern Africa.

Client: Lesotho Highlands Development Authority (LHDA).

Main Contractor: WRES JV, a joint venture consisting of Webuild S.p.A. (Italy), Raubex Construction (South Africa), Enza Construction (South Africa) & Sigma Construction (Lesotho).

Project Engineers: ZUTARI Consulting engineers.

Specialist Subcontractor: Post Tensioning & Structural Solutions (PTS-S) in partnership with OVM International (China) and Wiecon (Taiwan).

Construction Engineering design (ILM): Struttura Consulting (South Africa).

STRUCTURAL DETAILS

The total length of the viaduct is 822m with 2x end spans of 36m, 13 internal spans of 50m and 1x centre span of 100m supported by an extradosed stay cable arrangement consisting of two pylons located on the two piers either side of the 100m span, with each pylon supporting 6x 37-strand extradosed stay cables using a saddle arrangement built into the pylons for each stay.

The bridge deck were constructed using the Incremental Launch Method (ILM) from 2x casting yards located at the two opposing abutments, where the bridge deck segments were constructed, joined together and launched towards the 100m centre span where the two halves of the bridge deck were then joined together in the middle of the center span by means of a stitch section after installation and tensioning of the extradosed stay cable system.

The pulling method adopted by PTSS for launching consists of 2x 450t hydraulic strand jacks located at the abutments connected to pull pins located in the bridge deck.

POST-TENSIONING & STRUCTURAL SOLUTIONS (PTS-S) SCOPE

Post Tensioning (PT) supply and execution by PTS-S, consisting of the following:

- PT material supply, which included PT cable, OVM PT anchor system, OVM ribbed HDPE PT sleeves and PTS-S Hi-Flow PT grout.
- PT equipment supply for installation, stressing and grouting of PT cable tendons.
- PT site execution, which included site installation, stressing and grouting of PT tendons.

Stay cable supply and site execution by PTSS and its partner OVM, consisting of the following:

- Stay cable material supply by OVM, which included stay cable strand, form tubes through bridge decks, HDPE stay pipe, anchor system and stay saddles in pylons.
- Stay cable installation and tensioning by PTS-S with support by OVM.
- Stay cable monitoring system supplied and installed by OVM.

Incremental launching services by PTS-S, which included the following:

- Fabrication, supply and installation of launching girders.
- Fabrication, supply and installation of temporary launch bearings and reinforced elastomeric sliding pads.
- Fabrication, supply, installation and operation of hydraulic bridge launching system.
- Installation of temporary pier ties between abutments and top of piers to stabilize piers against the horizontal launch forces.
- Design, supply and installation of electronic pier deflection monitoring system during launching.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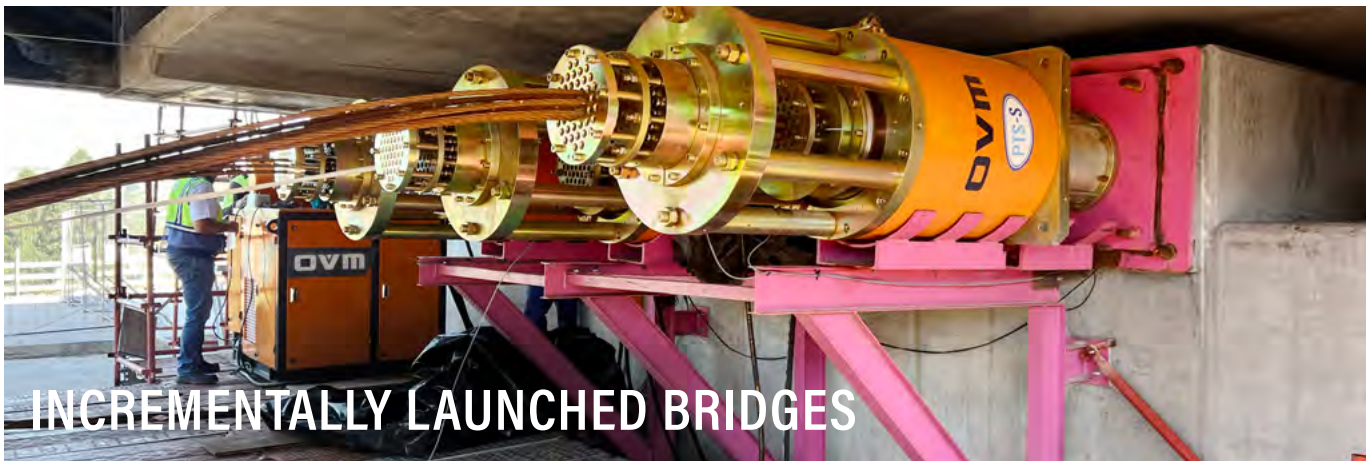
PROJECT

KEY RIDGE VIADUCTS 1A & 1B



INCREMENTALLY LAUNCHED BRIDGES

PROJECT OVERVIEW

Project: Sterkspruit Valley East Viaducts (B0291 A & B), located on the N3 in the outer Durban area of Kwazulu Natal between Hillcrest and Hammarsdale.

Client: South African National Roads Agency Limited (SANRAL).

Main Contractor: WBHO Roads & Earthworks.

Project Engineers: BVi Consulting Engineers.

Specialist Subcontractor: Post Tensioning & Structural Solutions (PTS-S) in partnership with Struttura Consulting Engineers (South Africa) and OVM international (China).

STRUCTURAL DETAILS

The total length of the 2x curved viaducts, located side by side, is 362m with each viaduct consisting of 2x end spans of 33,8m and 7x internal spans of 42m each. Each bridge deck has a downhill slope of 3.5% from abutment A1 (South) to abutment A2 (North) & consist of 26x 14m long segments, constructed and joined together in two casting yards located behind Abutment A2 (North).

The pulling method were adopted by PTS-S as the launching method due to the wider than normal top slab resulting in a heavier than normal deck weight, which combined with the longitudinal 3,5% uphill launch slope, required the use of 3x 650t strand jacks for launching which were connected to the bridge deck through pull pins. The 3,5% uphill gradient also required the use of brake pins inserted through the bridge deck that kicked against concrete brake blocks that were incorporated into the casting yard below the deck to prevent the bridge deck from sliding backwards under its self-weight between launches.

POST-TENSIONING & STRUCTURAL SOLUTIONS (PTS-S) SCOPE

PTS-S were subcontracted by the main contractor, WBHO (Roads & Earthworks division) for the following specialist scope of work.

Post tensioning supply and execution, consisting of the following:

- Concentric Cable Tendons Located in top and bottom slabs of the bridge deck in the longitudinal direction.
- Draped Cable Tendons located in webs of bridge deck & profiled to a parabolic profile within the webs.
- Transverse Cable Tendons located transversely in the bridge deck top slab of bridge deck perpendicular to the deck's longitudinal axis.

Construction Engineering & Incremental launching services, consisting of the following:

- Casting yard design, including temporary piers & thrust beams between casting yard and abutments to transfer launch forces from the abutments where launching equipment were located.
- Design & installation of temporary pier stays to stabilize piers against the horizontal launch forces.
- Design, fabrication, supply and installation of launching girders.
- Design, fabrication, supply and installation of movable cover over casting yard.
- Design, fabrication, supply of temporary launch bearings and reinforced elastomeric sliding pads.
- Design, fabrication, supply, installation and operation of hydraulic bridge launching system and modifications to permanent works to accommodate the method of launching.
- Design, supply and installation of electronic pier deflection monitoring system for launching operations.

PTS-S POST TENSIONING & STRUCTURAL SOLUTIONS

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